lectures on the "Poets of Great Britain and Ireland," delivered at the Music Hall, in aid of the library of the Working Classes' Association.

The scientific world of Belfast are preparing themselves for the approaching meeting of the British Association. The loss of Mr. Wm. Thompson, the eminent naturalist, a native of and resident in the town, will be most severely felt upon the occasion. It is proposed to erect a memorial to him, in the form of an additional room in the Belfast Museum, to which institution he has bequeathed his collection, to be called the Thompson Gallery. Subscriptions are bountifully flowing in.

## VALUATION OF DILAPIDATION.

HOLBROOKE v. PIGGOTT.

This action was brought at the Wandsworth County Court to recover 50*l.* on contract for dilapidations of a house leased to defendant. The chief feature was the wide estimates of the surveyors; plaintiff's surveyor estimating the damages at 62*l.* 2s. whilst defendant's surveyor cut it down to 5*l.* 19s. 6d. Evidence having been given as to the covenant which bound defendant to keep Holbrooke House, Richmond, in proper repair, and to deliver it up in the same condition as when entered upon, Plaintiff's counsel called Mr. J. W. Ellis. Witness said he was a surveyor, residing at Richmond. Had had much practice in the office of Messrs. Musgrove and Gadsden. Was instructed to make a specification of the dilapidations of Holbrooke House. His estimate was 62*l.* 2s. Is acquainted with leases and dilapidation clauses.

Cross-examined.—Messrs. Musgrove and Gadsden are general surveyors, and whilst with them went through many specifications. Am not properly entered into business on my own account. It is common in dilapidations to specify minutely. Observed a clause in the counterpart of the lease binding the tenant to paint the house externally every three years. For the external painting be allowed 15*l.* Saw Mr. Piggott upon this, and told him if he could satisfy me the house had been externally painted a deduction might be made; but it was apparent a portion only had been done. The roof was in a bad state; and being informed there was, some years since, an iron railing in front of the house, I allowed for that. I found some ivy growing over the walls, and as ivy harbours wet and damp, and causes premature decay, besides making houses uncomfortable, I charged for its removal.

Mr. Swift said the case rested upon the sole evidence of Mr. Ellis, who admits that he has not been in practice for himself, and all his experience in surveying was obtained in his articleship to a firm more in the light of house agents than surveyors: indeed he would be bound Messrs. Musgrove and Gadsden could not measure a rod of brickwork. He should be able to prove that so good a state was the house in, that Mr. Holbrooke offered to renew the lease upon advanced terms. After some remarks, Mr. Swift called Mr. Richard Brewer, who said, I am a surveyor at Richmond. I could not make dilapidations more than 5*l.* 19s. 6d. in all. Have not allowed anything for the door, because I consider it so great an improvement; but if it were put in its former place 2s. would pay for it. Never took, as Mr. Ellis has, sweeping chimnies for dilapidations in my life. Should think the external walls had been painted within three years, but it is difficult to say.

Cross-examined: Drew the plans for the new sessions-house. Am parish and road surveyor. Also contract to build houses myself. Made calculations irrespective of parties, and to the best of my experience and judgment.

Mr. Piggott said he was a valuer, and accompanied the last witness over the house. The damage he estimated amounted to 6*l.* 1s. 6d. Had taken the house of his father. The boundary wall belonged to the adjoining house. In 1849 his father paid 13*l.* 14s. for painting the house externally. The lease expired in June 1851. In all 124*l.* had been lately expended in improving and repairing the house, and considered it in such a good state of repair that it is impossible to find any fair dilapidations.

The Judge.—It appears to me (without for one moment asserting that either of the witnesses are actuated by motives to make their estimates high or low to suit their friends) that surveyors are as bad as advocates,—they will not see: they enlist themselves, and adopt the feelings of those who employ them. Years ago I presided at a Petty Sessions, where the question of being over-rated or low-rated was constantly before me. The parochial surveyors made their valuations as high as they could, and the appellant's surveyor's is, perhaps, as much too low as the other's is too high. I often wished surveyors would not have acted so unconscientiously. With regard to this case, it is quite out of the question I can decide to my own satisfaction or the public's. It is a pity the case had not been settled by arbitration, or I had the assistance of the jury. However, as it is my duty to give a verdict one way or the other, without any scale to go by, taking all discrepancies into consideration, I must give a verdict for the plaintiff; damages reduced to 20*l.* and costs.

## THE USE OF GAS AS FUEL.

THE ATMOPYRE AND POLYTECHNIC FIRE.

I SINCERELY thank you for the independent notice, taken in a recent number of your paper, of my little contrivance, the "Atmopyre," and for the clear and effective explanation you have given of the plagiarism of it, now paraded under the title of "The British Polytechnic Fire," and perpetrated under circumstances incredibly shabby.

As you are interested in the efforts now making to introduce gaseous bodies having an affinity for oxygen, as substitutes for common fuel, may I trouble you with a few facts acquired during my experience of the last three years?

1st. I do not claim any credit for scientific profundity: my invention is merely a "happy thought," which may be improved, and subserve many useful purposes. When first the idea occurred to me of converting the gas-burner into an artificial cinder, or reservoir of heat, I tried a great variety of materials—iron, brass, copper, platinum, and clay, mixed with metallic oxides, or pounded porcelain and glass, or plaster of Paris, and other substances, in different proportions. The majority of these bodies were rejected, for sufficient reasons, after a long series of experiments, and the exact mixture of argillaceous materials which is described in my specifications was adopted.

Your suggestion of employing the enamelled iron, as a material for the "tongues of fire," occurred also to Mr. Baily, but it was found impracticable to preserve free the holes for the transmission of the gas.

In taking out the patent, I could have secured the exclusive right of making the artificial embers, or "hoods," of *any material*, but, under the advice of Professor Cowper and my patent agent, I merely guarded the argillaceous material. Had I taken a wider protection, it would have saved Messrs. Bachhoffner and Defries, and a few others, some expense and disappointment in the vain attempt to produce equal effects with the rejected substances.

More than two years' experience of the "hoods" at very high temperature has shown their perfect indestructibility. So well known is this property, that a gentleman in the Potteries, not aware that I had used these "burners," both for lighting and heating, has incurred the expense of a patent for making "argands," "fish-tails," and other known forms of gas-burners, of this identical material.

Each of the burners at present used is a small cylinder, of which the surface measures 5 square inches: it is perforated at equal distances with ninety holes, each the fiftieth part of an inch in diameter. By this arrangement, the flame, or "incandescent cone," is literally stretched out like an elastic body, and consequently the points of contact between the air and the gaseous fuel are multiplied, and the blue flame, affording evidence of perfect combustion and intense heat, is produced. If, however, the superficial burning surface were simply a horizontal plane, the supply of air would be insufficient to maintain so vivid a fire.

2. The fuel which I have commonly employed, and that only which can be practically relied upon, is the common carburetted hydrogen, or coal gas; but if the apertures in the "hoods" be made smaller, hydrogen gas may be burnt, and made to produce a brilliant semblance of a coal fire. Price is, however, here an insurmountable obstacle, as this fluid cannot be produced at a cost sufficiently cheap to be used generally, even for light.

M. Gillard, late secretary to M. Guizot, has patented an ingenious method of generating hydrogen by the decomposition of steam in its passage over red-hot charcoal; but, notwithstanding the most persevering canvass, and the possession of undoubted merit, he did not succeed in inducing capitalists to take up his scheme. He proposed to supply his gas to the public at the rate of 2s. the 1000 cubic feet, but the quantity required to be consumed in order to make his beautiful cylinder of filligree platinum sufficiently incandescent to give light, made it much more expensive than the common coal gas. The light was most beautiful, and almost as pure as that of the sun, but this merit could not prevail against its defective economy.

Dr. Dalton compiled a valuable table of the comparative heat-generating properties of fuels, estimated by weight. The relative power of hydrogen is represented by the figures 24,000, and that of coal gas by 6,300; but as the specific gravity of the latter is ten times as great as that of the former, it would require nearly three volumes of hydrogen to produce the same effect as the volume of coal gas.

I have been greatly interested in the application of hydrogen as fuel. This result can only be produced by the use of argillaceous burners as solid intermedia. Could the decomposition of water, by the use of zinc and sulphuric acid, be made a step in the process of manufacturing zinc paint, hydrogen could be supplied to the public at a moderate rate; and I have faith that this great boon will be secured before long, though certainly not by means of the Polytechnic process.

3. As gas of whatever kind must always be, when compared with coals, an expensive fuel, the idea of heating apartments by simple radiation from surfaces heated with gas, and arranged like our present open grates, is a perfect delusion. By such arrangements ninety *per cent.* of the heat is lost. The desired effect can only be realised by the joint effect of radiation and convexion. The fire must be carefully included in proper media, and every ray of caloric appropriated as far as possible by introducing currents of pure air in contact with the heated sides of the stoves.

To procure a substance fitted to secure all the effects desired by the use of these vessels has proved a real labour. No known substance had the property of resisting the necessary variability of temperature without contaminating the purity of the air. This desideratum has, however, been found in an argillaceous mixture, which will bear to be heated to redness, and against which currents of air impinging in great quantity, but only for a moment, become warmed to bloodheat, and afterwards circulate in apartments without losing any of their virgin qualities. In fact, Mr. Copeland's beautiful porcelain stoves are now in successful operation in bed-rooms and other apartments having proper flues.

4. The application of the atmopyric stoves in small collateral rooms without flues has been a matter of difficulty, owing to the distillation of the products of combustion to ascend in cold metallic tubes; but Mr. Henry Baily, by a philosophic contrivance, has succeeded in securing the escape of the vapour under all circumstances.

5. The main advantage belonging to the atmopyric principle is the solid medium it affords for the accumulation of heat; the sides of the "hoods" being made of any thickness, and heaps of fictile fragments placed in juxtaposition. Hence a mass of solid fire is produced, which possesses a sharpness indispensable in many culinary operations; and that may be made to *cumulate* to an intensity sufficient to smelt the precious metals.

This is an effect which it is obvious thin leaves of platinum can never produce.

6. The atmopyre is now applied to the generation of steam: a foot of gas will evaporate a pound of water. Consequently, sixty feet of gas consumed will equal a horse power. The expense is absolutely greater than that of coal, but when the collateral saving of labour is considered, the great levity of the gas, and its elasticity which enables it to be compressed into one-fortieth part of its bulk, its eligibility for small stationary engines, for locomotives, and small low pressure boats, is not "the mere baseless fabric of a vision."

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